

**UNITED STATES DISTRICT COURT  
DISTRICT OF MINNESOTA**

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IN RE: NATIONAL HOCKEY LEAGUE	)	
PLAYERS' CONCUSSION INJURY	)	MDL No. 14-2551 (SRN/BRT)
LITIGATION	)	
_____	)	
	)	
This Document Relates To:	)	
ALL ACTIONS	)	

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**PLAINTIFFS' MEMORANDUM OF LAW IN  
OPPOSITION TO THE NATIONAL HOCKEY LEAGUE'S MOTION TO  
EXCLUDE TESTIMONY OF DR. ROBERT C. CANTU**

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The National Hockey League (“NHL”) seeks to exclude the expert testimony of Robert C. Cantu, M.A., M.D. FACS, FAANS, FICS, FACSM. *See* Dkt. 767, 769. Plaintiffs respectfully submit this memorandum in opposition. For the reasons stated below, the NHL’s motion to exclude Dr. Cantu should be denied.

### **INTRODUCTION**

In support of their motion for class certification, Plaintiffs submitted an expert Declaration by Dr. Robert C. Cantu, a renowned neurosurgeon and perhaps *the* leading authority on sports related neurological trauma and injuries in the world. Dr. Cantu posits that concussions and subconcussive trauma to the brain are dangerous, with both temporary and permanent effects. Following a blow to the head, metabolic, cellular and subcellular changes in the brain occur, some of which may be permanent. NHL hockey players are within the upper tier of risk for concussive and subconcussive brain trauma among contact sports participants, leaving them at risk of suffering both acute and permanent effects. November 9, 2016 Declaration of Robert C. Cantu (“Cantu Initial Decl.”) at 3-4; *see* Dkt. 646. The opinions are hardly surprising or counterintuitive, however the NHL might depict them.

The NHL begins its attack on Dr. Cantu by invoking the canard “[l]aw lags science; it does not lead it.” NHL Memo. at 1. The NHL proceeds to take that statement to an illogical extreme, advocating the notion that science must be at an end, with everything definitely resolved, before the law can take note of it. Thus, the NHL argues that the opinions expressed in Dr. Cantu’s Initial Declaration should be excluded because he allegedly cannot identify each link in the pathophysicological mechanism by which

repeated head impacts result in neurological damage. This ignores the fact that identification of each step in this complex process at the cellular and subcellular level is not necessary to establish causation and that there are many medical conditions, whose ultimate causes are not in dispute, for which every link in such complex processes have not been identified.

Putting aside the meritless attack on Dr. Cantu's opinions, the NHL also ignores the procedural posture of this litigation and the purpose for which his Initial Declaration was submitted: class certification. Under controlling Eighth Circuit precedent, a full *Daubert* analysis is not appropriate at the class stage, which involves a provisional finding by a judge, who is better equipped than a jury to give appropriate weight to an expert opinion. A more generalized showing of reliability in light of the criteria for class certification is all that is required at this stage. Nevertheless, the authorities cited by the NHL relate to full *Daubert* analyses on dispositive motions on the merits in non-class cases.

In tailoring the modified *Daubert* analysis to the class certification motion, it must be noted that the issue is not who should prevail on the merits but whether common answers to be determined by common evidence exist within the class. The definitive resolution of all scientific questions impacting the merits is not required to determine whether common issues exist and what evidence will resolve those issues. If the Cantu Initial Declaration was so facially deficient in its underpinnings that his opinions should be excluded even for purposes of the class motion, one must wonder why the NHL felt

compelled to submit **19** expert declarations to rebut it on that motion. If the Cantu Initial Declaration fell on its own, the NHL would not need any of those.

Another fundamental problem with the NHL's argument is that it presumes that scientific certainty is required to establish legal causation when, in fact, that bar is considerably lower in a duty to warn case and any case governed by a preponderance of the evidence standard. If 100% absolute causal/scientific certainty was required, as the NHL mistakenly asserts, there would never be an instance where two opposing parties in a suit would both be allowed to introduce experts on causation, and any case turning on expert testimony would be decided on summary judgment. Obviously, 100% absolute causal/scientific certainty is not the standard under *Daubert*.

Finally, the NHL hardly cites Dr. Cantu's Initial Declaration, referencing just four paragraphs. In what amounts to an attack on a straw man, the NHL only references Paragraphs 21, 45, 47 and 106 out of Dr. Cantu's detailed, 54-page, 160 paragraph Initial Declaration. NHL Mem. at 4, 9 n.4, 23. The NHL seeks to exclude opinions that it has completely ignored. Instead, the NHL concentrates on cherry-picked quotes from Dr. Cantu's deposition, most of which are incomplete, misleading, or out of context. The fact is, Dr. Cantu's deposition testimony that further research would be helpful boosts his credibility and establishes that (in striking contrast to the NHL's "flat earth society" experts) Dr. Cantu is not just a hired gun repeating what his employer wants to hear.

A good starting point for considering this motion is not the NHL's motion papers or even this response but rather a simple reading from start to finish of Dr. Cantu's Initial Declaration itself. It is a modest and measured statement from the foremost expert in the



area, whereas the NHL's motion based on snippets from Dr. Cantu's deposition is an "alternative facts" argument. The NHL cannot escape the impact of the opinions expressed in Dr. Cantu's Initial Declaration by ignoring them. Its motion should be denied.

### **BACKGROUND**

The relevant facts are stated in Plaintiff's memorandum in support of class certification, *see* Dkt. 640, and will not be restated here. In connection with the class motion, Plaintiffs have submitted Dr. Cantu's Initial Declaration. Further refuting the NHL's spurious attempts to exclude Dr. Cantu, Plaintiffs submit a Supplemental Declaration by Dr. Cantu, dated February 6, 2018 ("Cantu Supplemental Decl."). *See* Supplemental Declaration of Robert C. Cantu, MD. Even the NHL does not contest the obvious – that Dr. Cantu is the dean of experts in the study of long-term effects of repetitive brain trauma, especially in sport. He is currently the Medical Director and Director of Clinical Research at the Dr. Robert C. Cantu Concussion Center [at Boston University]. Cantu Initial Decl., Ex. 1. Even a brief glance at Dr. Cantu's curriculum vitae reflects that he is not just an expert in the subject matter of this case but a front lines initiator in the study of sports related head trauma and resulting neurological injuries. *Id.*

Some of the key positions that Dr. Cantu holds *currently* in addition to the Concussion Center are:

- Clinical Professor Neurology and Neurosurgery, Boston University School of Medicine.
- Founder Center for The Study of Traumatic Encephalopathy (CSTE), Boston University.

- Senior Advisor to NFL's Head, Neck and Spine Committee.
- Member/Co-Chair Equipment and Rules Committee NFLPA Mackey/White TBI Committee.
- Medical Director, National Center for Catastrophic Sports Injury Research, Chapel Hill, NC.
- Co-Director, Neurologic Sports Injury Center at Brigham and Women's Hospital, Boston, MA.
- Director, Service of Sports Medicine, Emerson Hospital, Concord, MA.
- Chief of Neurosurgery Service, Emerson Hospital, Concord, MA.
- Editorial Boards of *Current Sports Medicine Reports*, *American Journal of Medicine & Sports*, *Neurosurgery*, *The Physician and Sportsmedicine*, and *Clinical Journal of Sports Medicine*.
- Executive Committee Joint Section on Neurotrauma, Congress Neurological Surgeons/ American Association Neurological Surgeons
- Medical Advisory Board State Boxing Commission of Massachusetts.
- Board of Directors, Massachusetts Brain Injury Association.
- Co-Chairman, NASCAR Safety Task Force, American College Sports Medicine, Indianapolis, IN

Cantu Initial Decl., Ex. 1 at 2-3. Among the numerous notable previous positions that he has held are:

- Teaching Fellow in Surgery, Harvard Medical School.
- Chairman, Department of Surgery, Emerson Hospital, Concord MA.
- President, American College of Sports Medicine.

- Editorial Board of *The Journal of Athletic Training*.
- President, American College of Sports Medicine.

*Id.*

If Dr. Cantu is not qualified to provide expert opinions in this case, no one is. That may be the outcome the NHL would like, but it is wrong. Dr. Cantu’s straightforward opinion is summarized in three paragraphs of his Declaration which are referenced in the Introduction above. Cantu Initial Decl. at ¶¶ 20-22.

Finally, Dr. Cantu is obviously an active supporter of athletics going back to his time as a varsity baseball player at Berkley. Numerous sporting associations and sponsors, including professional sports leagues, have sought his expertise. Contrary to the NHL’s suggestion, he is not a sporting detractor with a chip on his shoulder and an agenda. Cantu Initial Decl., Ex. 1 at 1-8.

### **ARGUMENT**

#### **1. At the Class Certification Stage a Flexible *Daubert* Analysis is Applied to Expert Testimony.**

Rule 702 of the Federal Rules of Evidence governing expert testimony is a “rule clearly...of admissibility rather than exclusion.” *Lauzon v. Senco Prods., Inc.*, 270 F.3d 681, 686 (8th Cir. 2001) (quotation omitted); *see also Johnson v. Mead Johnson & Co.*, 754 F.3d 557, 562 (8th Cir. 2014) (noting “cases are legion that...call for the liberal admission of expert testimony”). The *Daubert* standard for admissibility is flexible and permissive, consistent with the “liberal thrust of the Federal Rules and their general approach of relaxing the traditional barriers to opinion testimony.” *Daubert v. Merrell*

*Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 588 (1993) (internal quotation marks and citation omitted). “A *Daubert* inquiry is not designed to have the district judge take the place of the jury to decide ultimate issues of credibility and accuracy.” *Lapsley v. Xtek, Inc.*, 689 F.3d 802, 805 (7th Cir. 2012).

The “focus” of the *Daubert* inquiry “must be solely on principles and methodology, not on the conclusions that they generate.” *Daubert*, 509 U.S. at 595. Doubts regarding the usefulness of an expert’s testimony should be resolved in favor of admissibility. *United States v. Finch*, 630 F.3d 1057, 1062 (8th Cir. 2011). A party’s “mere disagreement with the assumptions and methodology used does not warrant exclusion of expert testimony.” *Synergetics, Inc. v. Hurst*, 477 F.3d 949, 956 (8th Cir. 2007). The question is not whether the expert’s analysis is perfect, or even correct, but whether it falls outside “the range where experts might reasonably differ.” *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 153 (1999).<sup>1</sup> Moreover, “the factual basis of an expert opinion goes to the credibility of the testimony, not the admissibility, and it is up to the opposing party to examine the factual basis for the opinion in cross-examination.” *Bonner v. ISP Tech., Inc.*, 259 F.3d 924, 929 (8th Cir. 2001) (citation and quotation marks omitted). *Quiet Technology DC-8, Inc. v. Hurel-Dubois UK Ltd.*, 326 F.3d 1333, 1345 (11<sup>th</sup> Cir. 2003)(alleged deficiencies in an

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<sup>1</sup> See also *David E. Watson, P.C. v. United States*, 668 F.3d 1008, 1015 (8th Cir. 2012) (“disagreement with underlying assumptions” not grounds for exclusion of expert testimony); *In re High Fructose Corn Syrup Antitrust Litig.*, 295 F.3d 651, 660 (7th Cir. 2002) (rejecting exclusion of the “responsible though of course not necessarily correct work of a qualified professional”); *In re Scrap Metal Antitrust Litig.*, 527 F.3d 517, 529 (6th Cir. 2008) (“The task for the district court in deciding whether an expert’s opinion is reliable is not to determine whether it is correct, but rather to determine whether it rests upon reliable foundation, as opposed to, say, unsupported speculation.”).

expert’s analysis—such as supposed shortcomings in calculations and inadequacies in studies and reports—are more properly attacked through the well-worn adversarial techniques of cross-examination, presentation of contrary evidence, and competing expert testimony, because such alleged defects go to the weight of the expert’s testimony, rather than to its admissibility)(citations omitted). Even if this Court was required to perform a full *Daubert* inquiry at this stage, Dr. Cantu’s opinions would pass muster, as the NHL’s criticisms go to the weight given to his opinions, not their admissibility.

That is not the standard, however. The Eighth Circuit has rejected application of a full *Daubert* inquiry at the class certification phase. *In re Zurn Pex Plumbing Prods. Liab. Litig.*, 644 F.3d 604, 612 (8th Cir. 2011). The court explained:

Class certification ‘is inherently tentative,’.... and [a] conclusive *Daubert* inquiry cannot be reconciled with the inherently preliminary nature of pretrial evidentiary and class certification rulings.

The main purpose of *Daubert* exclusion is to protect juries from being swayed by dubious scientific testimony. That interest is not implicated at the class certification stage where the judge is the decision maker. The district court’s “gatekeeping function” under *Daubert* ensures that expert evidence “submitted to the jury” is sufficiently relevant and reliable, [citation omitted], but “[t]here is less need for the gatekeeper to keep the gate when the gatekeeper is keeping the gate only for himself.” [citation omitted]. Similar reasons support less stringent application of *Daubert* in bench trials. The “usual concerns of the [*Daubert*] rule – keeping unreliable expert testimony from the jury – are not present in such a setting.

*Id.* at 613. The more limited approach mandated by *Zurn* examines the reliability of the expert testimony only in the context of the criteria for class certification and the current state of evidence in the case. *Id.* at 614.

In an eye-opening omission, the NHL almost exclusively cites non-class cases in which *Daubert* was being applied to the ultimate merits.<sup>2</sup> The only two class stage cases that it cites have little impact. *In re Blood Reagents Antitrust Litig.*, 783 F.3d 183 (3d Cir. 2015)(simply remanding for a finding as to whether expert opinion was sufficiently reliable without any questioning of that opinion)(NHL Mem. at 5); *Grodzitsky v. Am. Honda Motor Co.*, 2015 WL 2208184, \*3 n.2 (C.D. Cal. Apr. 22, 2015)(stating that it would exclude testimony under *Daubert* or an alternative without citing *Zurn* or specifying the alternative)(NHL Mem. at 6).

In fact, attempts to exclude experts at the class certification stage have not typically been successful within the Eighth Circuit in the wake of *Zurn*. E.g., *In re Gobal Tel\*Link*

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<sup>2</sup> *Kumho Tire Co. v. Kirby Inland Marine Inc.*, 526 U.S. 137 (1999)(NHL Mem. at 2, 7, 11); *General Electric Co. v. Joiner*, 522 U.S. 136 (1997)(NHL Mem. at 7, 18, 24, 25, 28); *Chapman v. Procter & Gamble Distributing, LLC*, 766 F.3d 1296 (11<sup>th</sup> Cir. 2014)(NHL Mem. at 7, 18); *Wells v. SmithKline Beecham Corp.*, 601 F.3d 375 (5<sup>th</sup> Cir. 2010)(NHL Mem. at 8); *McClain v. Metabolife Int'l, Inc.*, 401 F.3d 1233 (11<sup>th</sup> Cir. 2005)(NHL Mem. at 1, 12, 15, 16, 18, 29, 30); *Sappington v. Skyjack, Inc.*, 512 F.3d 440 (8<sup>th</sup> Cir. 2008)(NHL Mem. at 7); *Knight v. Kirby Inland Marine Inc.*, 482 F.3d 347 (5<sup>th</sup> Cir. 2007)(NHL Mem. at 23); *Norris v. Baxter Healthcare Corp.*, 397 F.3d 1296 (10<sup>th</sup> Cir. 2005)(NHL Mem. at 7, 12); *Bonner v. ISP Technologies, Inc.*, 259 F.3d 924 (8<sup>th</sup> Cir. 2001)(NHL Mem. at 12); *Glastetter v. Novartis Pharms. Corp.*, 252 F.3d 986 (8<sup>th</sup> Cir. 2001)(NHL Mem. at 12, 13, 23, 24, 27); *Nat'l Bank of Commerce of El Dorado v. Associated Milk Prods. Inc.*, 191 F.3d 858 (8<sup>th</sup> Cir. 1999)(NHL Mem. at 15); *In re Mirena IUD Prods. Liab. Litig.*, 169 F. Supp.3d 396 (S.D.N.Y. 2016)(NHL Mem. at 24); *In re Zolof Products Liab. Litig.*, 26 F. Supp. 3d 449 (E.D. Pa. 2014)(NHL Mem. at 29); *Rimbert v. Eli Lilly & Co.*, No. Civ. 06-0874 JCH/LFG, 2009 WL 2208570 (D.N.M. July 21, 2009)(NHL Mem. at 23); *Maras v. Avis Rent A System, Inc.*, 393 F. Supp. 2d 801 (D. Minn. 2005)(NHL Mem. at 6, 10, 20, 22); *In re Rezulin Prods. Liab. Litig.*, 369 F. Supp.2d 398, (S.D.N.Y. 2005)(NHL Mem. at 23); *Miller v. Pfizer, Inc.*, 196 F. Supp.2d 1062 (D. Kan. 2002), *aff'd*, 356 F.3d 1326 (10<sup>th</sup> Cir. 2004)(NHL Mem. at 12); *Anderson v. Bristol Myers Squibb Co.*, No. Civ.A. H-95-003, 1998 WL 35178199 (S.D. Tex. Apr. 20, 1998)(NHL Mem. at 7-8, 10, 24); *Pick v. Am. Med. Sys., Inc.*, 958 F. Supp. 1151 (E.D. La. 1997)(NHL Mem. at 25).

*Corp. ICS Litig.*, 2016 U.S. Dist. LEXIS 163900, at \*17 (W.D. Ark. Nov. 29, 2016)(“The Court believes that judicial economy is poorly served, and the likelihood of prejudicial error is increased, by striking or excluding expert evidence prior to making any ruling on class certification.”); *In re Target Corp. Customer Data Sec. Breach Litig.*, 2015 U.S. Dist. Lexis 119063, \*3 (D. Minn. Sept. 8, 2015)(rejecting defendant’s attempt to exclude expert based on argument that it was not possible to measure a common impact from data breaches on financial institution class members); *Ascaro LLC v. NL Indus., Inc.*, 106 F. Supp. 3d 1015, 1022-23 (E.D. Mo. 2015)(Motion to exclude contamination expert’s report at class stage due to absence of sampling locations or methodology denied in view of *Zurn* standard; questions concerning factual bases and underpinnings of such a report go to weight); *Ebert v. General Mills, Inc.*, 2015 U.S. Dist. LEXIS, at \*17 (D. Minn. Feb. 27, 2015)(fact that expert in environmental exposure case could not testify as to uniform exposure or homogenous threat not a basis for exclusion at class certification stage).

The NHL’s over reliance on standards developed in drug and medical device cases is also telling. *See supra* fn. 2. In contrast to drug cases, where there is dispute over whether a drug causes some condition,<sup>3</sup> here there can be no dispute that repeated blows to the head can cause neurological conditions. Unlike the drug cases, it is the more

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<sup>3</sup> Even the FDA has concluded that strong evidence of a causal association – not definitive scientific proof – is sufficient to compel drug manufacturers to warn about adverse events. *See* 21 C.F.R. §§ 201.57(c)(6)-(7) (explicitly stating that “a causal relationship need not have been definitely established,” and instead must be based on “reasonable evidence.”). This standard “could be met by a wide range of evidence, including evidence that would not also support a higher evidentiary standard[.]” *In re Fosamax Alendronate Sodium Prods. Liab. Litig.*, 852 F.3d 268, 292 (3d Cir. 2017).

nuanced issue of “how much.” More importantly, drugs involve an overarching regulatory framework for warnings and clinical trials. Courts may be sticklers on evidentiary and expert issues where there has been billions of dollars worth of research and clinical trials. The closest thing to a clinical trial for neurological injuries in the NHL would be a prospective longitudinal study that would have to last decades. Cantu Sup. Decl. at 4-5. It is untenable to claim that there can be no relief and experts can offer no opinions on what should be considered fairly obvious in the interim.

The NHL will have every opportunity to cross-examine Dr. Cantu about his analysis at trial. Its attempt to preclude his opinions at this stage of the case is improper, and should be rejected by the court.

**2. *Daubert* Does Not Require a High Degree of Certainty on the Issue of Causation for Expert Opinions in a Duty to Warn Case Governed by a Preponderance of the Evidence Standard, and Certainly Not the 100% Absolute Causal/Scientific Standard Advocated by the NHL.**

Reading the NHL’s memorandum one might think that an expert may not testify on the issue of causation unless his or her opinion is exclusively based on peer reviewed, long term studies that conclusively establish causation with scientific or medical certainty. NHL Mem. at 7-11. Lost in that discussion is the fact that this is a duty to warn case to which a preponderance of the evidence standard applies on the ultimate issue. In other words, the standard for the admissibility of expert opinion on causation – especially for class certification – is substantially more relaxed than the NHL would have the Court believe.



The Minnesota Supreme Court decision in *Domagala v. Rolland*, 805 N.W.2d 14 (Minn. 2011), is instructive on the degree of certainty required to establish causation in a duty to warn case. *Domagala* determined that such a duty is created where the defendant had a “special relationship” with the plaintiff *or* where the defendant’s conduct created a dangerous situation. In the latter instance, the duty to warn is derived from a defendant’s general duty of care. Under either circumstance that might trigger a duty to warn, the question presented “is whether a reasonably prudent person in a specific situation would consider issuance of a warning to be an appropriate exercise of care.” 805 N.W.2d at 28.<sup>4</sup> Clearly, a reasonable person does not require medical or scientific certainty regarding causation before issuing a warning, and such certainty cannot be required in materials relied on by an expert.

The level of certainty on causation is also driven by the preponderance of the evidence standard which does not require scientific certainty. *See Wells v. Ortho Pharmaceutical Corp.*, 788 F.2d 741, 745 (11<sup>th</sup> Cir. 1986)(distinguishing scientific certainty from legal sufficiency); *City of New York v. Exxon Mobil Corp. (In re Methyl Tertiary Butyl Ether Prods. Liab. Litig.)*, 2009 U.S. Dist. LEXIS 59287, at \*23, n.70 (S.D.N.Y. July 6, 2009)(“reasonable certainty” causation standard means greater than fifty percent); *Grano v. Long Island R.R. Co.*, 818 F. Supp. 613, 618 (S.D.N.Y. 1993)(common

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<sup>4</sup> Resolution of any issue as to whether the NHL had a special relationship with players or created a dangerous situation is beyond the scope of this motion, but given that players’ conduct and actions on the ice are micromanaged and directed by teams, referees and league officials and the rules which allow for a dangerous game are created and enforced by the league, the standards for meeting either touchstone should easily be met.

law causation requirement satisfied by preponderance of the evidence and no certainty required to show that plaintiff's Lyme Disease was caused by work place that was tick infested).

Thus, the preponderance of the evidence standard informs an analysis of an expert's testimony under *Daubert*:

It is common in scientific literature for investigators to hedge their claims or couch their conclusions prefaced with the need for additional confirmatory research. *See In re Denture Cream Prods. Liab. Litig.*, 795 F. Supp. 2d 1345, 1362 (S.D. Fla. 2011) ("Scientists tend to hedge their claims in scientific papers."). Moreover, it is well settled that there are few if any certainties in science, *Daubert*, 509 U.S. at 590, and *Daubert* was not intended to impose an "exacting standard of causality" beyond the preponderance of the evidence "simply because scientific issues are involved." [Citation omitted].

*Johns v. Bayer Corp.*, 2013 U.S. Dist. LEXIS 51823, at \*\*49-50 (S.D. Cal. Apr. 10 2013). *See also Bitler v. A.O. Smith Corp.*, 400 F.3d 1227, 1236 (10<sup>th</sup> Cir. 2004)(testing of heater safety valve by expert to establish high degree of certainty as to causation was not necessary because of applicability of preponderance of evidence standard on ultimate issue); *Woodward v. Wal-Mart Stores East LP*, 2011 U.S. Dist. LEXIS 95370, at \*\*15, 22 (M.D. Ga. Aug. 25, 2011)(admitting under *Daubert* expert's opinion that a preponderance of the evidence supported conclusion that fall caused plaintiff's injury even if there was no medical certainty).

Dr. Cantu devotes considerable time to explaining the concept of "medical causation" and distinguishing it from "strong causal association." Cantu Sup. Decl. at 3-5, 16-17. The latter is legally sufficient in this case. Medical causation is a non-legal concept which has no applicability here. Cantu Sup. Decl. at 3. Dr. Cantu notes the specific

implausibility of the kind of study that would be required to demonstrate technical medical causation in this case – the 100% absolute causation for which the NHL advocates – as it would take decades and require cooperation of numerous parties and bodies associated with the NHL itself. Cantu Sup. Decl. at 4-5. Obviously, as the evidence in this case has amply demonstrated, that cooperation has not been forthcoming from the NHL. *See* NHL2110271 (NHL senior legal counsel, Julie Grand, responding in regards to whether the NHL should “study the long term neurocognitive and psychological effects of repeated concussions among NHL players,” stating that the NHL should “leave the dementia issues up to the NFL.”). *See* Dkt. 641 at Ex. 139.

Dr. Cantu provides an extended discussion of the metabolic, cellular and subcellular changes that occur after head impacts, ultimately leading to neurological degenerative conditions. Cantu Initial Decl., ¶¶ 41-61. The specific chain of events that follows a concussive or subconcussive events is set forth at Paragraph 46 of his Declaration. While a single study may not cover all aspects of the entire causal chain, 10 to 15 studies cover different aspects of it. Deposition of Robert C. Cantu (“Cantu Dep.”). at 85:10-88:15 (annexed as Exhibit 1 to the NHL’s Memorandum).

Dr. Cantu’s conclusions regarding causation have been bolstered by numerous studies published over the past year. Cantu Sup. Decl. at 8. Significantly, for example, a recent rodent study showed a positive correlation between cumulative head impact, in the form of repetitive head hits that were not concussive, and the development of the neuropathology of CTE. Cantu Sup. Decl. at 7. This new study provides the scientific causation link that the NHL has incorrectly claimed has been lacking. Moreover, Dr.

Cantu notes that in November 2017, World Rugby reaffirmed its Position Statement recognizing the link between repetitive head injuries and dementia. Cantu Sup. Decl. at 2.

Given that scientific or medical certainty is not required on ultimate issues and thus is not required in an expert's opinion or in materials on which her or she/relies, all or nearly all the NHL's arguments – and essentially all of its arguments on causation – have been refuted by Dr. Cantu.

**3. The NHL's Arguments Regarding Causation and Degree of Increased Risk Ignore the Nature of the Medical Monitoring Remedy that Plaintiffs Seek.**

The NHL consistently relies on authorities concerning individual personal injury cases for money damages in its attacks on Dr. Cantu's treatment of causation and degree of increased risk. The fact that this is a case in which medical monitoring is the remedy sought puts it in a different footing in terms of the relevance and reliability of expert opinions. There is no need to demonstrate that a specific injury suffered by an individual plaintiff was caused by head impacts in NHL hockey games; rather, it simply must be shown that participation in these games put players at a higher risk. This can be done without determining the exact number or severity of blows that increase risks by what precise degree.

In *In re Paoli R.R. Yard PCB Litig.*, 35 F.3d 717 (3d Cir. 1993), the Third Circuit found that an expert in a medical monitoring case could testify as to increased risk from PCB exposure simply on the basis of a plaintiff's residential history. 35 F.3d at 790-91. A residential history is parallel to an NHL player's career history. Residents in *Paoli* obviously varied in terms of their exposure to water and soil based on their individual

activities, just as individual players in a game might vary in terms of the precise number and force of head impacts they sustained, but the fact of residence was enough to posit on risk, just as the fact of playing is here.

The NHL's insistence that degree of risk must be established on a "dose responsive" basis is also misplaced in the medical monitoring context. NHL Mem. at 2, 5, 15-19, 32. The standards as to how much head trauma warrants medical monitoring under cautious medical standards versus whether trauma caused a specific injury in a specific individual are vastly different. There would never be a definitive "dose specific" or "number of hits" answer to the former question (advisability of medical monitoring) because it involves at least some degree of discretion, while the latter question (causation of a specific injury) is more definitive. *See Bandy v. Trigen*, 2006 U.S. Dist. LEXIS 47559, \*\*16-17 (E.D. Tenn. May, 5, 2006)(Expert should be able to testify on need for medical monitoring even if he cannot provide a conclusion as to the precise degree of risk).

In fact, Dr. Cantu has explained the dose relationship between head trauma and CTE in particular in great detail with reference to numerous authorities:

As to the existence of a dose-responsive relationship, both the literature and the work of Boston University have shown that increased exposure to head trauma leads to a greater scoring of CTE severity. Increased head impact exposure also has been shown to lead to increased tau pathologies in the brain. Furthermore, increased head impact exposure has been shown to lead to increased later-life neurodegenerative diseases other than CTE. Also consistent with dose-responsive relationship is the just published JAMA article of 202 football players where all cases of high school players with CTE had mild pathology while most college, semipro, and professional athletes had severe CTE pathology. This clearly demonstrates those with

CTE pathology with the least exposure had much less severe pathology compared to those with greater exposure to repetitive head trauma.

Cantu Sup. Decl. at 8-9 (seven footnotes citing seven studies omitted).

Reading the NHL's memorandum, which barely cites Dr. Cantu's Initial Declaration, one might mistakenly believe that Dr. Cantu did not utilize studies relating to impacts in athletics and hockey, incidence of neurological conditions among those sustaining impacts, or cellular changes upon head impacts. But, Dr. Cantu's Initial and Supplemental Declarations compellingly demonstrate that Dr. Cantu has carefully considered and drawn his conclusions from many causation related studies, including:

- Hoshizaki study on NHL head impacts per game and severity of impacts. Cantu Initial Decl. at ¶¶ 38, 57.
- Randolph & Kirkwood study on subconcussive blows in athletes causing white matter damage. Cantu Initial Decl. at ¶ 45.
- Tremblay study in *Brain* on white matter abnormalities in athletes with concussion histories. Cantu Initial Decl. at ¶¶ 50-54.
- Ikoerle study in the *Journal of the International Neuropsychological Society* on white matter alterations in university varsity hockey players. Cantu Initial Decl. at ¶ 50.
- Zhou findings in *Radiology* on atrophy and cellular changes in brain after single concussion. Cantu Initial Decl. at ¶ 58.
- Talvage study in *Journal of Neurotrauma* on functional and cognitive impairment from subconcussive impacts. Cantu Initial Decl. at ¶ 60.
- Wennbert & Tator study in *Canadian Journal of Neurological Science* on incidence of concussions and lost playing time in NHL. Cantu Initial Decl. at ¶ 72.
- Tagge study proving causation between repetitive brain trauma and CTE in rodent animal model. Cantu Sup. Decl. at 7.

- McKee study in the *Journal of Neuropathology and Experimental Neurology* on head trauma and CTE in young hockey players. Cantu Sup. Decl. at 7.
- Alosco study of repetitive head impact exposure and later life plasma total tau in former NFL football players. Cantu Sup. Decl. at 8.
- Montenigro study in the *Journal of Neuropathology* on predictive quality of cumulative head impact and neurological conditions in high school and college football players. Cantu Sup. Decl. at 8.
- Mez study showing increase in CTE pathology from high school football players to college and pro players who were exposed to more impacts. Cantu Sup. Decl. at 9.
- Ralston study on correlation between sub-concussive head impact and white matter changes in college athletes. Cantu Sup. Decl. at 10.

In discussing the purported need for dose specific studies, the NHL would not permit an expert to consider any athletic studies that are not limited to NHL hockey (such as those involving football). Once again, the NHL is wrong. Reasonable inferences can be drawn about arguably lower “dosage” environments from studies involving higher levels of exposure. *Greenville v. W. R. Grace & Co.*, 827 F.2d 975, 980 n.2 (4<sup>th</sup> Cir. 1987)(finding persuasive expert testimony based on correlation between relatively higher level of asbestos exposure and disease in case involving lower level exposure environment). Dr. Cantu does not exclusively rely on football studies; rather, such studies are part of an overall mix in which an expert draws on studies and evidence that, viewed individually, are not yet dispositive, but which considered together by a qualified individual can lead to reasonable and reliable conclusions. *See* Cantu Sup. Decl. at 8-10 (discussing dose response relationships and aggregation of factors in causation analysis).

Dr. Cantu notes that different sports and different playing positions carry different head impact exposure profiles, but this does not invalidate research in one sport as applied to another. Cantu Sup. Decl. at 15. In any event, he cites many studies of hockey players. Cantu Initial Decl. at ¶¶ 38, 55, 57, 72, 75-78, 82-87. Dr. Cantu summarizes the relevancy of multiple sports as follows:

While different contact sports will prove to have different rates of NDD, *all* contact sports have increased head impact exposure compared to non-contact sport athletes and those without a history of head trauma. The disparity between the hockey player and football player is far less than the disparity between the hockey player and a control without repetitive head trauma. Therefore, it is clear, and has been for many decades, that NHL hockey players face an increased risk of long-term neurodegenerative diseases such as CTE because of head trauma they experience in the NHL.

Cantu Sup. Decl. at 14.

Similarly, the NHL's contention that case studies are "particularly unreliable" bases for establishing causation is categorical and overstated. NHL Mem. at 12. In the case cited by the NHL, the Eighth Circuit accepted testimony of an expert as to whether and at what dosage ingestion of a household product could cause certain ailments, in spite of the fact that the expert's theory had not appeared in scientific literature, had not been subjected to peer review, was not supported by epidemiological studies and was not yet established as fact in the scientific community. *Bonner v. ISP Techs., Inc.*, 259 F.3d 924, 931-32 (8<sup>th</sup> Cir. 2001). In fact, case reports and studies should, again, be treated as part of the total mix of evidence available to an expert in evaluating his or her opinion. *Kennedy v. Collagen Corp.*, 161 F.3d 1226, 1229-30 (9<sup>th</sup> Cir. 1998)(*Daubert* did not require expert testimony to be based on identical case studies to prove causation of injuries from collagen); *Donner v.*



*Alcoa Inc.*, 2014 U.S. Dist. LEXIS 193127, at \*8 (W.D. Mo. Dec. 19, 2014)(expert's opinion linking aluminum dust to fibrosis supported by case reports in tandem with other factual bases).

Dr. Cantu's opinion is not that of a clinician who has come across a few stray case reports in the course of his practice. Case reports are not a dominant part of the basis for his declarations. To the contrary, they are simply part of a greater mix that includes well over 100 research articles, most published in prestigious peer reviewed journals. Cantu Initial Decl. Ex. 3; Cantu Sup. Decl. at 8-10. In this context, consideration of some case studies is elucidating, not disqualifying.

Dr. Cantu also demonstrates how an *aggregation* of factors, any of which alone might not satisfy the requirements for legal causation, may together meet these requirements. Cantu Sup. Decl. at 9-10. One particularly resonant factor is the complete absence of CTE in those who have not suffered head trauma, which demonstrates that head trauma is a necessary precondition. *Id.*

The NHL treats the case and Dr. Cantu's opinion as if they were exclusively about CTE. NHL Mem. at 1, 2, 5, 9-23. The entire subject of causation, the crux of the NHL's arguments, is limited to CTE. It is as if other LTNDDs do not matter and Dr. Cantu had not offered opinions on anything but CTE. In fact, only one section of Dr. Cantu's Initial Declaration is devoted to CTE. Cantu Initial Decl., ¶¶ 95-106. Most importantly, Dr. Cantu describes how changes in grey and white matter attributable to concussive and subconcussive impacts result in general decline in brain structure and function, dementia,

Alzheimer's, mild cognitive impairment and/or depression with age. Cantu Initial Decl., ¶¶ 45-47, 50-52, 54, 61-62.

Dr. Cantu explains that numerous researchers have recognized the effect that head trauma has on white matter and brain reserve, and that repetitive head trauma combined with brain changes associated with normal aging can advance cognitive decline. Cantu Sup. Decl. at 11. Studies reflect that concussions and repetitive head trauma result in a reduction in white matter density and brain volume. Cantu Sup. Decl. at 12. Dr. Cantu was particularly concerned by a study of university hockey players showing an increase in major white matter diffusivity after one season of play. Cantu Initial Decl., ¶ 55. His conclusions are amply supported by studies showing that NHL players typically are subjected to sufficient head trauma to cause white matter damage in a single game. Cantu Initial Decl., ¶¶ 57, 70-76.

CTE is far from the only issue, but it is the one the NHL has seized on because the NHL apparently believes the limitation to post mortem diagnosis makes studies of it easier to attack. In any event, Dr. Cantu has pointed to numerous studies, some of which have come out in the six months following his Initial Declaration, that establish extremely strong causal association between head trauma and CTE. Cantu Sup. Decl. at 6, 7 & n.14, 8 nn. 19-20, 9 n.21, 10 n.26 & n.31, 13 n.43, 14 n.45; Cantu Dep. at 43:6-12. Cantu notes that CTE research is not actually in its infancy, because "the modern definition of CTE merely memorialized the panoply of definitions and studies." Cantu Initial Decl. at ¶ 98.

Given Dr. Cantu's stature, the breadth of literature that he has considered and the more informal standard for reliability applicable in connection with a class motion, any

attempt to outright exclude his opinions on causation related topics represents a substantial overreach. Again, the starting point for an evaluation of this motion must be a simple reading of Dr. Cantu's Declaration, putting aside jousting by the lawyers. The opinions expressed in Dr. Cantu's Initial and Supplemental Declarations easily satisfy *Daubert* and the *Zurn* standard applicable at this stage of the case.

**4. The NHL Consistently Mischaracterizes Dr. Cantu's Deposition Testimony.**

The NHL relies almost exclusively on misleading snippets from Dr. Cantu's deposition testimony, which the NHL apparently believes is easier to parse and mischaracterize than his Initial Declaration. However, Dr. Cantu's opinions as stated in his Initial Declaration, in his deposition, and as amplified in his Supplemental Declaration, expose the NHL's misleading characterizations, and more importantly, establish that his opinions are admissible under *Daubert* and *Zurn*. The NHL's memorandum is rife with such mischaracterizations, but some examples illustrate what Dr. Cantu's opinions actually are:

Page	The NHL's Characterization of Dr. Cantu's Deposition Testimony	Dr. Cantu's Actual Testimony and Opinions
2	"Cantu confessed that he is unwilling to submit his CTE opinions for publication because he does not believe they would peer-review." (Dep. at 75:22-76:6).	Dr. Cantu did not testify that he was "unwilling" to submit his CTE opinions for publication. Rather, Dr. Cantu testified that he and colleagues sometimes leaned toward using the term "association" rather than causation in order to avoid fire from some "segments" in peer review. Dr. Cantu was discussing certain case studies and not his overall CTE

		conclusions or opinions. (Dep. at 75:22-76:19).
2	Cantu allegedly admitted that his theory about “increased risk” from concussions and subconcussive impacts might not apply to NHL players because he did not “have a solid scientific basis” to make that assertion for hockey players. (Dep. at 250:9).	Dr. Cantu refutes this claim in his Supplemental Declaration. Given a hypothetical of one player who frequently fought and suffered three concussions in a two year career and another player who never fought or suffered concussions over a twenty year career, Cantu was asked to compare CTE risk. Dr. Cantu could not do so without knowing more as to the severity of the concussions, but stated that he was worried more about the player who had no concussions but played for a far longer period of time. (Dep. at 246:12-251:16). Dr. Cantu believes that studies post dating his deposition establish that the player who was active longer without diagnosed concussions would be at greater risk. Cantu Sup. Decl. at 15. He states that risks of neurodegenerative disease from head trauma sustained by NHL players are greater than the risks to the public in general or those who do not participate in contact sports. Cantu Sup. Decl. at 4-5. He also discusses rates of CTE in hockey and NHL players versus participants in other sports. Cantu Sup. Decl. at 13-14.
5	Cantu purportedly “testified” that “there’s not a correlation in our group between the number of concussions and CTE.” (Dep. at	In reality, Dr. Cantu was discussing a specific study which did not attempt to

	238:10-11).	correlate the number of concussions and CTE but rather correlated years of playing with CTE. The former was not possible due to underreporting of concussions and lack of information on severity. (Dep. at 237:16-240:8).
8	Cantu testified “I don’t have a problem today using the word ‘association’ instead of ‘causality.’” (Dep. at 338:2-3).	Dr. Cantu felt that using “association” rather than “causality” was white-washing the issue and kicking the can down the road but put his name on the joint report on the basis of the “totality of the document.” (Dep. at 336:5-338:9). To bridge the gap between strong association and technical medical causation would take a longitudinal study of NHL players lasting over a decade. Cantu Sup. Decl. at 2-4.
9	<p>“Q: But the cause-and-effect relationship remains to be shown scientifically you would agree with?</p> <p>A: Technically, yes. (Dep. at 385:21-386:2)</p>	Dr. Cantu testified that that a prospective study would be needed to show causation if rigid scientific criteria were applied but that the “association is there in spades and has been for decades and decades.” (Dep. at 384:21-385:20) . The scientific literature overwhelmingly supports strong causal association. <i>See, e.g.</i> , Cantu Sup. Decl. at 5-7.
9 n.4	“Cantu admitted that this [CTE] study ‘was somewhat biased in that everybody had a neurodegenerative disease.’ Cantu Dep. 57:8-10). He also stated that he agreed with the study’s conclusion that ‘given the	Dr. Cantu did not dispute the validity or impact of the study but merely agreed with a statement in it that further research was needed to assess

	retrospective nature of this study, our findings should be considered provisional,’ asserting that ‘it’s imperative to screen other brain banks that are not specific for neurodegenerative diseases to see what they find.’” (Dep. at 228:13-15, 19-21).	the frequency and severity of head impacts and CTE. He did not question that such impacts were a causal factor. (Dep. at 227:12-228:17). The causal association between head trauma and CTE is “extremely strong,” and Dr. Cantu has cited numerous studies showing so that have been published just in the time since his initial declaration. Cantu Sup. Decl. at 6, 7 & n. 14, 8 nn. 19-20, 9 n.21, 10 n.26 & n.31, 13 n.43, 14 n.45.
11	“Neither Cantu nor any other researcher has published a paper asserting that concussions and subconcussive blows have a causal relationship with CTE. In fact, Cantu confirmed that this opinion has never been published specifically because Cantu harbors concern that it would not pass the peer-review process.” (Dep. at 75:22-76:6).	Dr. Cantu did not testify that he was “unwilling” to submit his CTE opinions for publication. Rather, Dr. Cantu testified that he and colleagues sometimes leaned toward using the term “association” rather than causation in order to avoid fire from some “segments” in peer review. Dr. Cantu was discussing certain case studies and not his overall CTE conclusions or opinions. (Dep. at 75:22-76:19). Dr. Cantu engages in an extensive discussion of studies demonstrating a causal relationship between head trauma and CTE. Cantu Sup. Decl. at 5-10.
13	“Cantu agreed that case studies cannot be relied upon to establish causation, saying ‘they can establish an association but really in and of themselves don’t establish a causation.’” (Dep. at 26:7-9).	Dr. Cantu testified that case studies in of themselves may not show causation, but causation for CTE may be easier to show than for lung cancer because while you do not always have smoking with

		lung cancer, you do always have head impacts with CTE. (Dep. at 23:21-29:6).
13	“The overwhelming number of cases have come from individuals who died with cognitive, behavioral, and mood symptoms consistent with CTE, so they’re symptomatic individuals... That in and of itself is a bias, I would agree.” Dep. at 31:10-16.	Outside of this particular study, however, CTE has not been seen in brains from members of the general public who did not suffer from head impacts. Dep. at 31:21-32:10. Dr. Cantu explains at length the lack of instances of CTE in persons who did not suffer head trauma. Cantu Sup. Decl. at 5-6, 9-10.
14	New definitions of CTE make old studies obsolete. (Dep. at 171:4-9).	Dr. Cantu was merely observing that one would need to go back and examine the data in a particular 1973 study to make sure that they met current criteria. (Dep. at 171:16-172:7).
14, n.8	“As Dr. Cantu confirmed, there have been no studies connecting post-concussion syndrome or acute effects following a concussion to CTE.” (Dep. at 43:14-19).	There are published cases of people having both. (Dep. at 43:6-12).
17	Cantu noted relative lack of data on how many hits a hockey player takes to the head. (Dep. at 65:5-7, 250:19-21).	Dr. Cantu observed there was new good information on repetitive head trauma in NHL games from Dr. Blaine Hoshizaki and that the length of participation is what Dr. Cantu is primarily concerned about. (Dep. at 250:19-251:9). Dr. Cantu has identified additional information and studies with respect to hockey players and NHL players. Cantu Sup. Decl. at 13-14.
17	“But even if these measurements of head trauma in NHL players existed, it is still currently unclear how much more head	Dr. Cantu’s comments were primarily directed at CTE and he merely stated “[b]ut a single

	trauma is necessary to incur an increased risk. Cantu admitted that a single concussion or single subconcussive blow is <i>insufficient</i> , but could not quantify the amount of head trauma that would be <i>sufficient</i> .” (Dep. at 97: 15-17; 97:2-6).	concussion I wouldn’t expect the average individual to set in place later life concerns...” (Dep. at 96:21-97:1). There is a clear dose relationship between head trauma and CTE severity. Cantu Sup. Decl. at 8.
18-19	“Cantu did not calculate NHL players’ increased risk above the background risk for CTE because <i>the data required for this calculation does not exist</i> ” (Dep. at 530:22-531:18).	Dr. Cantu testified that while one would ideally like to see a study including background risk, it is common sense that the average person in the population doesn’t take the amount of head trauma that a person in contact sports does. (Dep. at 527:12-529:5). Numerous recent studies from 2016-17 establish a dose relationship between head trauma and CTE. Cantu Sup. Decl. at 8.
21	According to the NHL, the causal chain for CTE is an unproven theory. (Dep. at 205:19-206:3).	Dr. Cantu states that the chain has been established with reasonable medical certainty through a combination of papers rather than just one. (Dep. at 83:17-84:20). The fallacy of the NHL’s argument is further refuted by Dr. Cantu in his Supplemental Declaration.
22	“Because CTE cannot be diagnosed in the living, it is impossible to untangle CTE symptoms from post-concussion syndrome.” (Dep. 42:9-43:12).	Dr. Cantu merely distinguishes between CTE and post-concussion syndrome and does not say anything about the inability to diagnose CTE while patients are alive or “untangling.” (Dep. at 42:9-43:12).
22	The NHL alleges Cantu “confirmed” that Boston University is not sure CTE is	Dr. Cantu was simply noting that a majority of neurodegenerative diseases are



	progressive. (Dep. at 41:2-9)	progressive and get worse over time. (Dep. at 41:2-9).
25	“Cantu admitted that (a) he could not recall one study that captures the entire causal chain he proposes, (b) this chain has not been published in any peer-reviewed paper, and (c) he does not plan to publish his causal theory.” (Dep. at 85:10-20).	While a single study does not cover all aspects of the causal chain, different studies, perhaps 10 to 15, cover different aspects of it. The theory is not unique to Dr. Cantu. (Dep. at 85:10-88:15). His causation conclusions have been bolstered by numerous new papers in 2016-17. Cantu Sup. Decl. at 8.
26	Cantu agreed with statement in Koerte study on hockey players that aspects of its findings were speculative. (Dep. at 125:13).	Those findings have been confirmed by a number of authors. (Dep. at 125:9-18).
26	“The Hart study, which only looked at NFL football players, found no differences in white matter integrity between retired players and matched controls, unless the player already had cognitive impairment, dementia or depression...” (Dep. at 134:11-135:10).	Dr. Cantu observed that a large number of the players had symptoms, and that a third of the participants would not be expected to have cognitive impairment or dementia compared to the general population. (Dep. at 135:7-20).
26	“The Tremblay study only included 15 test subjects, exclusively measured the impacts of concussions (as opposed to concussions and subconcussive blows), and did not attempt to connect its observations to clinical symptoms.” (Dep. at 142:17, 146:18-19, 151:6-9).	Dr. Cantu: “What the study supports is the fact that aging and brain trauma act synergistically to produce a worse effect than if you just have aging alone.” (Dep. at 148:19-22).
27	“Cantu cites the work of Drs. Randolph and Kirkwood in his report to support a connection between white matter and diminished brain reserve – but he admitted that white matter was not mentioned in the work of Randolph and Kirkwood. (Cantu Dep. at 115:7-21), and that those authors certainly do not conclude a <b>causal</b> relationship between head trauma and diminished brain reserve. ( <i>Id.</i> at 117:19-	Dr. Cantu had multiple articles in mind, not just one by Drs. Randolph and Kirkwood, and it was just one Randolph article out of these that did not discuss white matter. His comments about causation were not about this subject in general but rather were simply about one specific Randolph article.

	118:3.) As Cantu testified, he ‘wouldn’t say causal would be an appropriate word’ to describe the hypothesized relationship between brain matter reserve and concussive or subconcussive impacts. ( <i>Id.</i> at 364:5-6).	(Dep. at 114:8-121:4; 363:17-364:6).
32	Cantu doesn’t “‘have a solid scientific basis to answer” a question comparing the risks for an NHL player who received three concussions versus a player who played 20 years without diagnosed concussions. (Dep. at 250:8-18).	Dr. Cantu could not say without knowing more as to the severity of the concussions, but stated that he was worried more about the player who had no concussions but played for a far longer period of time. (Dep. at 246:12-251:16). In his Supplemental Declaration, Cantu states that “[a] very recent publication from our BU group published months after that deposition would lead me now to suggest the hockey player with a long exposure and no recognized concussions would have a higher risk of CTE compared to a hockey player with a short career and a history of concussions.” Cantu Sup. Decl. at 15.

The NHL’s snippets show that it is trying to erect a far higher causation barrier than *Daubert* imposes. But, as established *supra*, 100% absolute/scientific causation is not the standard under *Daubert*. Dr. Cantu’s testimony, and his Initial and Supplemental Declarations show that his opinions clearly satisfy the standard required by *Daubert* and *Zurn*, and as such should be considered in this Court’s analysis of Plaintiffs’ Motion for Class Certification.

**CONCLUSION**

For the reasons stated herein, the Court should deny in all respects the NHL's motion to exclude the testimony of Dr. Cantu and grant such other and further relief as it deems just and necessary.

Respectfully submitted,

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*Plaintiffs' Executive Committee*

**UNITED STATES DISTRICT COURT  
DISTRICT OF MINNESOTA**

IN RE: NATIONAL HOCKEY LEAGUE ) PLAYERS' CONCUSSION ) LITIGATION ) _____)	No. 0:14-md-02551 (SRN/JSM)  <b>LOCAL RULE 7.1(f) WORD COUNT COMPLIANCE CERTIFICATE REGARDING PLAINTIFFS' MEMORANDUM OF LAW IN OPPOSITION TO THE NATIONAL HOCKEY LEAGUE'S MOTION TO EXCLUDE TESTIMONY OF DR. ROBERT C. CANTU</b> )
This Document Relates to:  ALL ACTIONS.  _____)	

I, Michael R. Cashman, certify that Plaintiffs' Memorandum of Law in Opposition to the National Hockey League's Motion to Exclude Testimony of Dr. Robert C. Cantu complies with Local Rule 7.1(f).

I further certify that, in preparation of this memorandum, I used Microsoft Office Word 2007, and that this word processing program has been applied specifically to include all text, including headings, footnotes, and quotations in the following word count.

I further certify that the above-referenced memorandum contains 9,910 words in 13-point Times New Roman font.

Respectfully submitted,

HELLMUTH & JOHNSON, PLLC

Dated: February 9, 2018

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**Yolanda Sherman**

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**Case Name:** IN RE: National Hockey League Players' Concussion Injury Litigation

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#### **Docket Text:**

**MEMORANDUM in Opposition re [767] MOTION to Exclude Expert Testimony of Robert C. Cantu, M.A., M.D., FACS, FAANS, FICS, FACSM filed by Plaintiffs' Executive Committee. (Attachments: # (1) LR7.1/LR72.2 Word Count Compliance Certificate)(Cashman, Michael)**

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